

Exercise 4 Animation

1. Modifying the existing sequence

This exercise consists of creating three sequences in order to simulate the movement of a space shuttle: the shuttle's arrival, its mid-stage "traveling", and its final departure, and the calculations necessary to produce this 9-second animation.

Objective

To activate "Edit Animation" and modify the existing sequence.



Captain Start

Macintosh

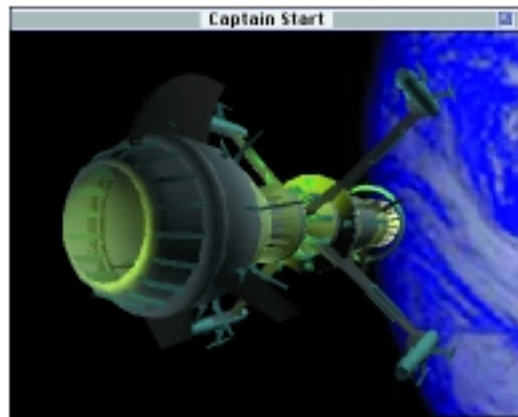


Captain Start.opt

Windows

- Start Art•lantis Render and open the "Captain Start" file, which is located in the sub-folder "Tutorial 4" in the "Tutorial" folder.

Once the file is open, this scene is displayed in the preview window:



As with exercises 2 and 3, the rendering elements have been prepared for you: the 3D background, lighting, shaders and mapping for the space shuttle.



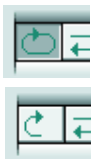
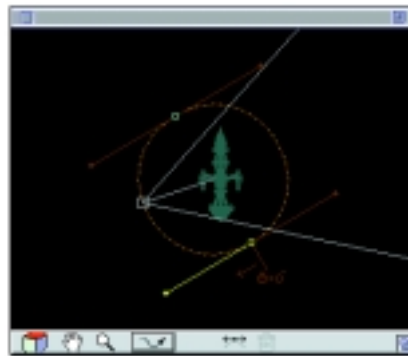
Description of the first sequence:

At the start of the sequence, the space shuttle is coming from the earth and is at a great distance from the camera. Then it slowly moves towards the camera, now at a dangerous proximity.

To simulate this effect, we must create a “traveling” sequence (move the camera) starting from a far point bringing us closer to the shuttle.

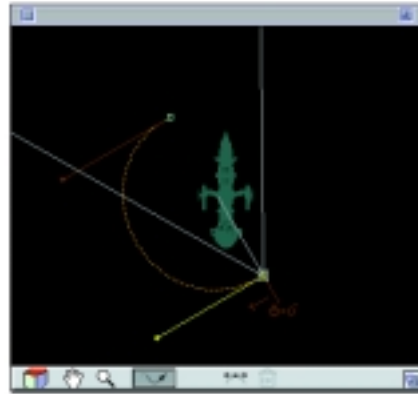
- Select “Edit Animation” from the “Windows” menu and edit in the projected view window.

The existing sequence provides you with a path around the space shuttle:

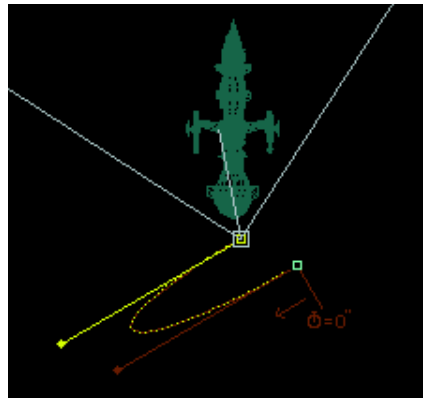


Use this path to create the first sequence. For the traveling, you must “open” the path and transform it into a ray (half-circle path) made up of two editable points: one at the beginning and one at the end of the sequence.

- Click on the “Loop” icon to open up the path. The path is now made-up of a half-circle.



- Select the second editable point, hold down the mouse button and move it to the right of the space shuttle's porthole:



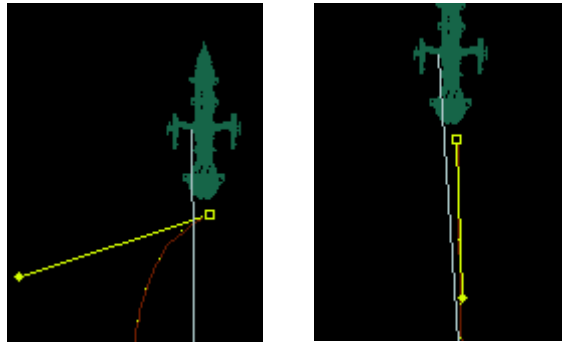
- Select the first editable point, hold down the mouse button and move it far away from the shuttle, vertical to the second point.



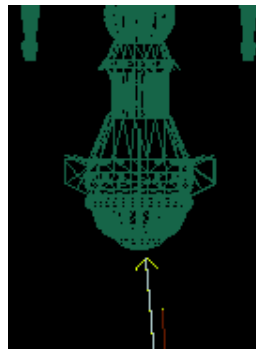
In order to correctly arrange the point at a far distance, it is necessary to reduce the space shuttle's size in the window (zoom backwards using the "-" key).

To make the path into a straight-line:

- Select the first editable point's extreme tangent and move it in a circular motion towards the top - this way you superimpose it on the path's line.
- Repeat the same operation with the second point's tangent (moving in a circular motion towards the bottom) to create a very rectangular trajectory:



- Click on "Edit path" to move into "Camera behavior" mode. Select the arrow's end and holding down the mouse button, move it so that it points to the middle of the porthole:





- Indicate the real duration of the sequence as 3 seconds (rather than the 4 seconds set by default), and modify the focal angle to 90°.

To control the first and last image of the sequence and make the necessary adjustments, you can obtain the number of the desired image in the dialog window. For example, to visualize in the preview window the first image, choose image number 1.

- In the “Seq. duration” zone, click in the middle box and enter the number “1”: 1/45.

In the preview window, image 1 allows you to control the shuttle’s position: the size is extremely reduced and centered in the middle of the window (the cross).

- Do the same thing with the last sequence image: image 45 : 45/45 (3 x 15 images/second):



- Click on the “Play” button in the animation’s control mode to visualize the path in the preview window.

While the animation “plays” in the two windows, you can in **real time** change the path, that is to say that you can move the editable points, improve the trajectory by adjusting the tangents, change



the sequence duration or the number of images per second.

Before you start creating the next two sequences, save your file.

As it is with the panoramas, Art•lantis Render offers two methods for creating a sequence (path) in the animation.

- either use the **Create** in the Animation dialog window: a new circular path is displayed in the middle of the projected view window and all you have to do is adapt it.
- or setup the new fixed cameras (under “Edit Fixed Cameras”) and then add them to the animation list.

The second and third sequences are created with the second method.

2. Add two more sequences

Objective

To create two new sequences with the help of 4 fixed cameras and use “Edit Fixed Cameras” from the “Windows” menu.

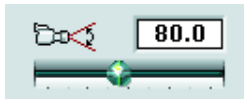
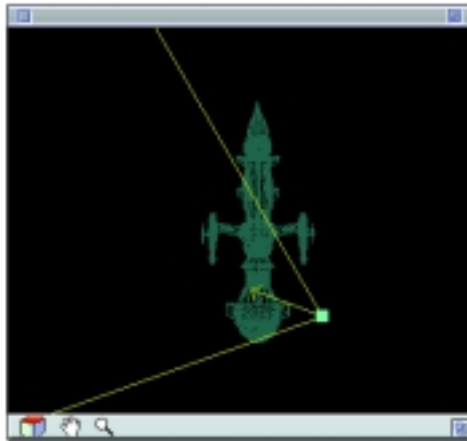
Creating a second sequence:

To produce the mid-stage “traveling” sequence of the space shuttle, you must set up two fixed cameras, indicating the beginning and end of the sequence. The aim of each fixed camera will be identical.

- Activate the “Edit fixed camera” setting in the “Windows” menu and display the projected view window.

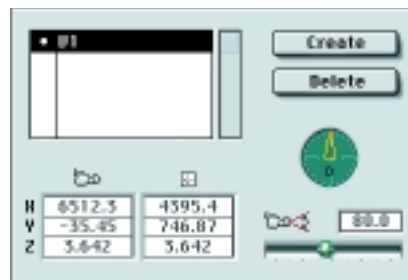


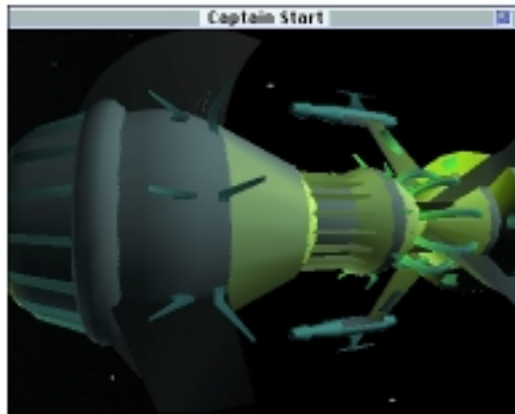
First fixed camera: use the existing fixed camera and move it as follows:



- **Modify the focal angle: 80°.**

The dialog window provides you with the new fixed camera's coordinates. Name this camera "V1" by double-clicking on its name in the list.





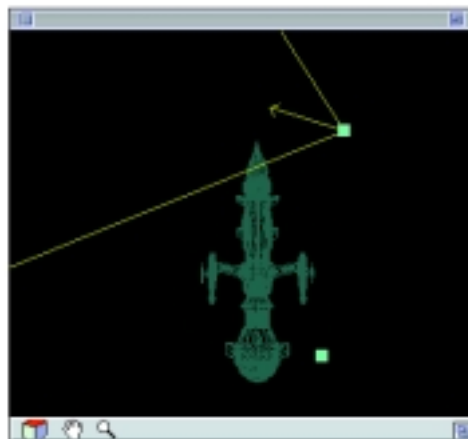
Second fixed camera:

Create

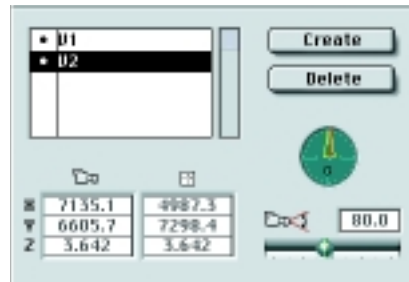
- Create a new fixed camera by clicking on the "Create" button and rename it: "V2".

In the projected view window, it is superposed on the proceeding fixed camera "V1".

- Select and move it towards the back of the space shuttle as follows:



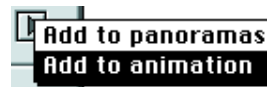
The dialog window gives you the new fixed camera's coordinates V2:



To transform these two fixed cameras into animation sequences:



- Click on the contextual menu icon and hold down the mouse button, choosing:



A new sequence is added to the animation list: “Sequence 2”.

Creating a third sequence:

The third sequence is the opposite of the first: a close-up view of the final departure of the space shuttle as it fades into the distance moving towards the moon. As with the second sequence, you must move the fixed camera, one close to the shuttle, the other very far away, and aimed in the same way, towards the back of the shuttle.

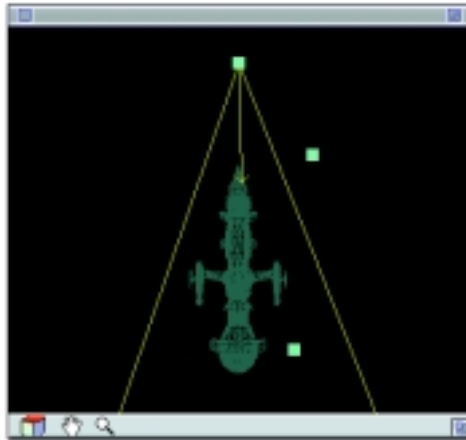
Create

First fixed camera:

- Create a new fixed camera by clicking on the "Create" button and rename it: "V3".

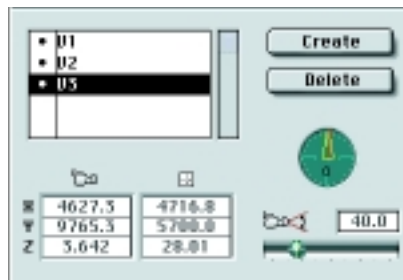
In the projected view window, it is superimposed on the preceding fixed camera "V2".

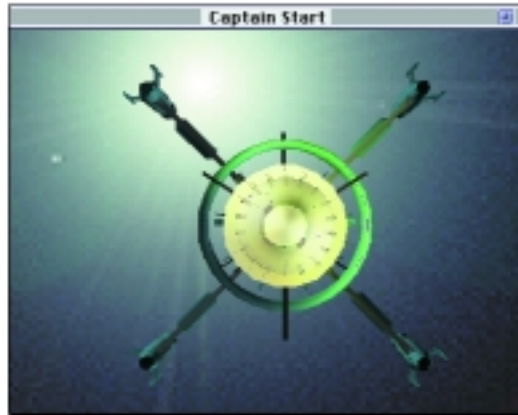
- Select and move it towards the back of the shuttle as follows:



- Modify the focal angle: 40°.

The dialog window gives you the fixed camera's coordinates V3:



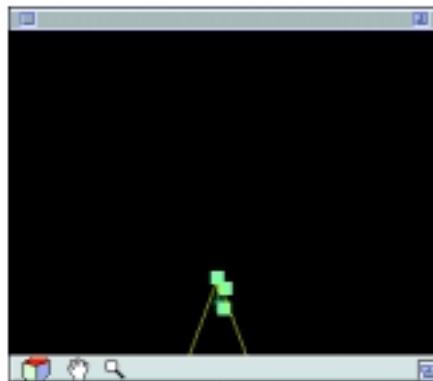


Second fixed camera:

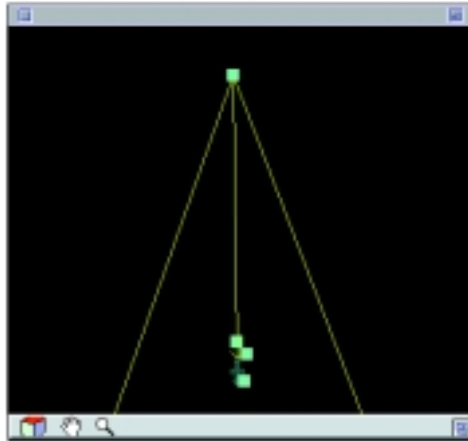
- **Create a new fixed camera by clicking on the “Create” button and rename it: “V4”.**

In the projected view window, it will be superimposed on the proceeding fixed camera “V3”.

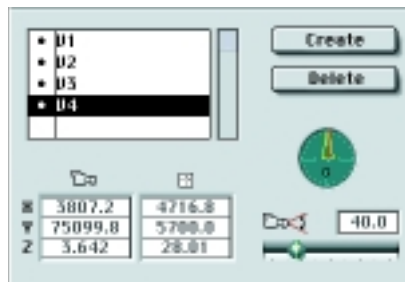
- **In the projected view window, reduce the shuttle’s size by hitting the keyboard’s “-” key three times and modify the frame with the “Hand” tool to move the shuttle towards the bottom of the window:**



- Select the fixed camera and slide it far away from the shuttle as follows:



The dialog window gives you the new fixed camera's coordinates V4:

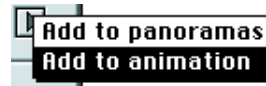


To transform these two fixed cameras into an animation sequence:

- **Deactivate the fixed cameras V1 and V2 by clicking successively on their black dots (•).** A simple click on each dot will make the dots disappear and render the fixed cameras inactive.



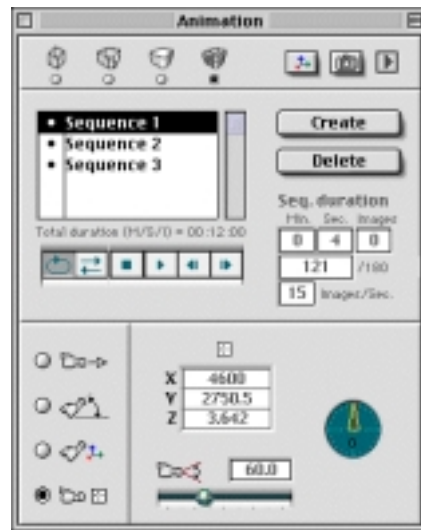
- Click on the contextual menu icon and hold down the mouse button, choosing:



A new sequence is added to the animation list: “Sequence 3”.



- Select “Edit Animation” in the “Windows” menu.
- In the dialog window, select “Sequence 2” and modify the sequence duration time: 3 seconds (in place of 4).
- Repeat the same thing with “Sequence 3”.



The animation is now made up of 3 sequences of 3 seconds apiece, with 135 images, making-up the film’s 9 second duration.



- Click on “Play” from the animation’s controls to view the 3 sequences.

All sequences must be active in order to view the three sequentially. Verify that “•” appears next to the 3 sequences in the list.

3. Timing

Objective

To set up the timing in the third sequence to simulate the shuttle’s stopping and acceleration.

Stopping the shuttle for a half a second:

- Select “Sequence 3” from the dialog window.

To simulate the stopping of the shuttle at the beginning of the third sequence, the first duration should be set-up during the sequence’s first image:

- In the “Seq. duration”, indicate the number of the first image: **91** (the 90 proceeding images correspond to the first two sequences, each one is made-up of 45 images).

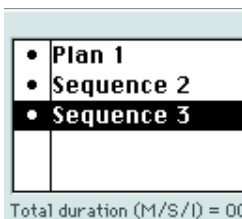
- In the projected view window, click on the “Edit path” icon to move into “Camera behavior” mode.

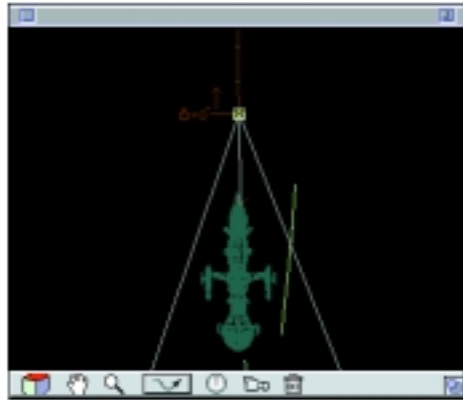
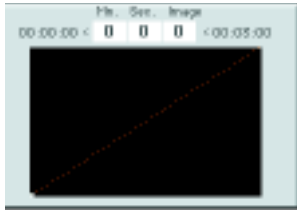
A stop watch will appear in the tool bar.

- Click on the “Stop Watch” icon:

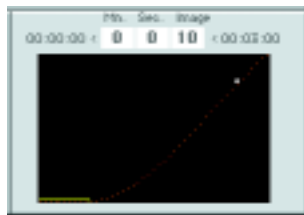
A stop watch appears where the camera is located.

The window’s dialog simultaneously displays a graph that represents the kinetic curve; its axes correspond to time and distance.





To achieve the desired effect, the distance must be zero for a half-second and the number of calculated images must be identical during this time.



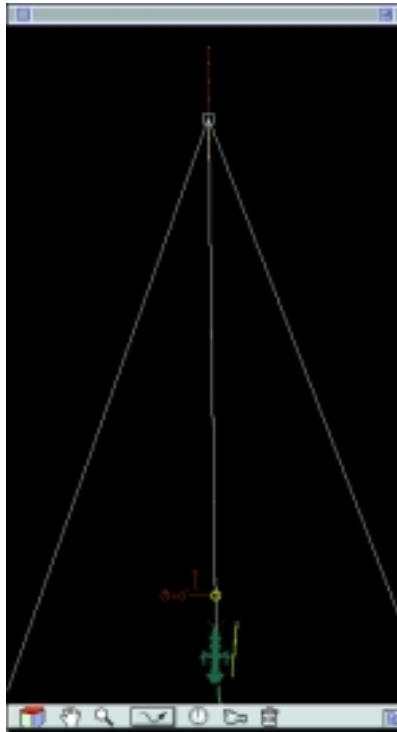
- In the editable text zone above the graph, indicate in the "Image" box the number 10.

Remember that time is always expressed in seconds and in number of images per second. With 15 images per second for this animation, 10 corresponds to more than half a second. The camera will be still during this time period.

The shuttle's one-second acceleration:

In this case, the effect is the inverse: to simulate an intense acceleration during one second, the distance must be great. The position of the second stop watch must be far away from the first, along the path.

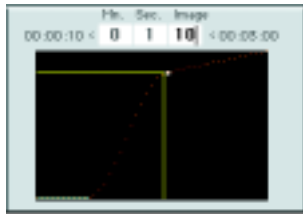
- In the projected view window, create a large frame to see the totality of sequence 3.
- Put the camera at the end of the path (4/5) by clicking on the path.



- Click on the “Stop watch” icon from the tool bar.
A second stop watch will appear at the location of the camera.

The graph indicates, at this point, the time that will pass: **2 seconds and 9 images.**

By indicating the movement time in seconds along such a great distance, the shuttle's acceleration effect is obtained. Knowing that the timing is always calculated with respect to the beginning of the first sequence, you must add a second to the first time's duration, being 1 second and 10 images.



- In the editable text zone above the graph, indicate "1" second and "10" images.

The kinetic curve shows the movement of the 3rd sequence:

- phase 1: no movement during 10 images.
- phase 2: serious acceleration during one second.
- phase 3: crossing speeds at the end of the path.

Try it yourself:

To diminish or accentuate the acceleration, you must modify the stop watch's placement in real time and verify the curve's changes:

- In the projected view window, click on the stop watch to choose it, hold down the mouse button sliding it along the path controlling the curve's changes:
 - at the end of the path: acceleration is accentuated
 - at the beginning of the path: acceleration is diminished.

4. Launching the final calculation

Objective

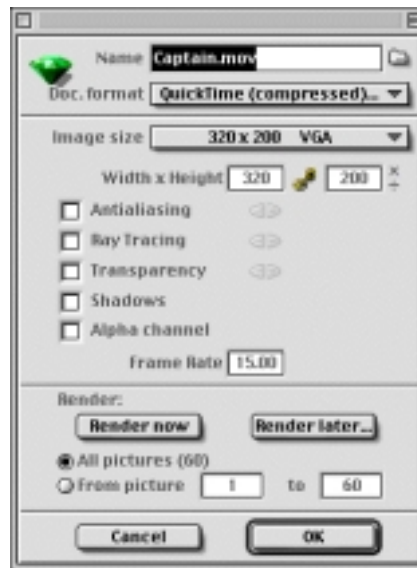
To choose the rendering parameters and start the animation's final calculation.

To get your 9 seconds of film, with 15 images per second, Art•lantis Render must calculate 135 images. With an average powered desk-top computer, the calculation time for 9 seconds takes 25 minutes.

Render



• Activate “Render Animations” from the “Render” menu. The following dialog box appears:

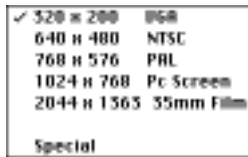




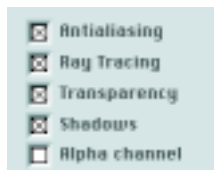
- Click on the “Folder” icon selecting the “Tutorial 4” folder and then click on “Select ‘Tutorial 4’ folder”.



- In the “Format” menu, choose “QuickTime (compressed).”



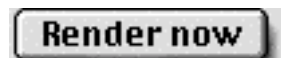
- In the “Size” menu,
- choose “320 x 200 VGA”. It is the size of the animation and the film will be played in the QuickTime format.



- Check the calculation options : Antialiasing (Good), Ray Tracing, Transparency, Shadows.



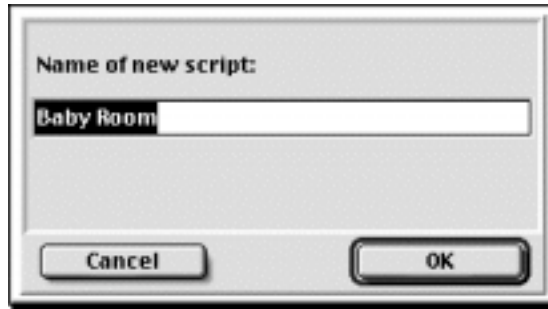
- Check the “all pictures (135)” box.



- Click on the “Render now” button to start the final calculation immediately.

In order to defer the final rendering calculation, do as follows:

- Click on the button “Render later...”
- Enter the name “Captain” in the resulting name dialog.



- Click on the OK button to validate the deferral.



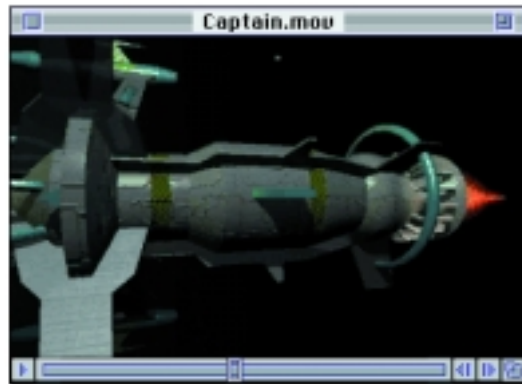
The deferred rendering is then represented by a script which will be ran with the specified parameters. The script has the name **"Captain.txt"** and is saved in a folder named Scripts, located in the Art•lantis folder.

At the end of the calculation, a new file will be created in your "Tutorial 4" folder: **"Captain.mov"**

To open the file and view the film:

- Double click on the **"Captain.mov"** file.

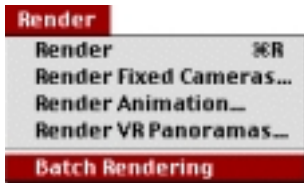




5. Launching the batch (deferred) rendering

Objective

To launch one or more items from the list of batch (deferred) rendering.



- Select the Batch Rendering option from the “Render” menu.

The previous step results in the following dialog box.



You can identify the following things from the list of batch rendering:

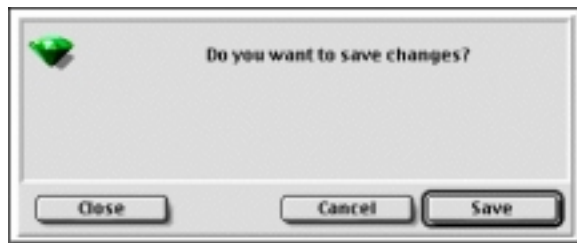
- The names of the scripts representing the batch

rendering.

- The type of each rendering
 - Image
 - VR
 - Animation
- An indicator in the far-left column indicating whether or not the corresponding rendering will be performed when the batch is launched. The "x" on the column means that the rendering will be performed. Clicking on the column activates or deactivates the indicator.

Once you select the items to be rendered, you need to...

- Click on the "Render" button.
- Click on the "Save" button in order to save the modifications to the Batch Rendering dialog box.



The rendering has been launched in batch mode. Art•lantis will calculate the images in the order in which they appear in the

list. That is, it will calculate first the image, then the VR, and finally the animations.